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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

AAPC 4/30/03

In re Application of	Atty. Docket
ANTONIUS A.C.M. KALKER ET AL.	PHN 17,025
SERIAL NO.: 09/348,891	GROUP ART UNIT: 2615
FILED: July 6, 1999	EXAMINER: T.Q. Tran

Please Enter TTQ 5/5/03

DETECTION OF A WATERMARK IN A COMPRESSED VIDEO SIGNAL

Commissioner for Patents
Washington, D.C. 20231

Sir:

RESPONSE UNDER 37 C.F.R. 1.116

This is in response to the Office Action mailed January 29, 2003, in which the Examiner finally rejected claims 1-6 under 35 U.S.C. 102(e) as being anticipated by U.S. Patent 6,278,792 to Cox et al.

Applicants traverse the above rejection and offer the following explanation.

The Cox et al. patent The Cox et al. patent discloses a robust digital watermarking in which a watermark to be embedded in a picture is a vector W[k], k=1...N. The watermark is embedded in the DCT domain. To this end, an equally long vector V[k] is extracted from the picture. More particularly, the DCT coefficients of the picture are classified into N sets. A weighted sum of the coefficients of set 1 constitutes V[1], a weighted sum of the coefficients of set 2 constitutes V[2], etc. The picture is

modified such that its vector V[k], k=1...N, has a high correlation with W[k].

The watermark detection is shown in Fig. 8. The detector receives an MPEG stream. The stream is Huffman decoded (80) so that the DCT coefficients are available. The coefficients are classified as described above and summed in an accumulator (82) to obtain a vector having length N. This vector is then correlated (84) with the watermark W[k] to be detected.

Fig. 10 of Cox et al. relates to detection of a watermark in a picture that has been subjected to an unknown offset in the horizontal and/or vertical direction. To this end, a specific registration pattern is embedded in the picture. The watermark detection process, which is shown in Fig. 10, comprises four distinctive phases:

1. Detection of the registration pattern (102, 104, 106);
2. Compensation of the offset based on the registration pattern (108);
3. Back-transforming the picture to the DCT domain (110, 112); and
4. Watermark detection in the DCT domain (114, 116, 118).

In Applicants' last response, Applicants had stated that Cox et al. detects the watermark in the DCT domain, while the subject invention does so in the spatial domain.

In response thereto, the Examiner stated "It is noted that the alleged 'watermark detection is performed in the spatial domain' is not recited in the claims."

Applicants submit that it should be clear that the subject invention detects watermarks in the spatial domain. In particular, claim 1 states "A method of detecting a watermark in a compressed video signal comprising spectral coefficients obtained by transforming pictures of said video signal". As such, the accumulation is being performed in the transform domain (DCT being a particular form of transforming a spatial signal). However, claim 1 further states "inverse transforming said accumulated coefficients into an accumulated plurality of pictures". Applicants submit that one skilled in the art would know that when a compressed video signal in a transform domain is subjected to inverse transformation, the resulting signal would be in the spatial domain. In support of this, Applicant notes that in the Substitute Specification on pages 5 and 6, paragraph [0015] describes Fig. 1 where the output from inverse discrete cosine transformer is applied to a watermark detection circuit 6. This detector is described in, for example, International Patent Application WO-A-98/03014, and on page 2, lines 15-17, wherein it is stated that the concerned detector detects watermarks embedded "in the spatial domain".

In this regard, Applicants submit that Cox et al. does not detect the watermark in the spatial domain. While Cox et al., referring to Fig. 10, discloses accumulating the DCT coefficients in 8X8 accumulators 102 and then converting the accumulated coefficients to the spatial domain in inverse DCT converter 104, this is done to compensate for the registration offset using accumulators 106 and registration process 108. Cox et al. then finds it necessary to convert back to the DCT domain, using accumulators 110 and the DCT converter 112 (see col. 18, lines 5-9), in order to detect and extract the watermark using the accumulators 114, the watermark extractor 116 and the watermark decoder 118.

In view of the above, Applicants believe that the subject invention, as claimed, is neither anticipated nor rendered obvious by Cox et al., and as such, is patentable thereover.

Applicants believe that this application, containing claims 1-6, is now in condition for allowance and such action is respectfully requested.

Respectfully submitted,

by 
Edward W. Goodman, Reg. 28,613
Attorney
Tel.: 914-333-9611

Official

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ART UNIT 2615

SERIAL NO. 09/348,891

FROM: Edward W. Goodman

REGISTRATION NO. 28,613

PHILIPS ELECTRONICS NORTH AMERICA CORPORATION
580 WHITE PLAINS ROAD
TARRYTOWN, NEW YORK 10591
TELEPHONE: 914-333-9611
FACSIMILE: 914-332-0615

Enclosed: R116 Response + Cover

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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of Atty. Docket

ANTONIUS A.C.M. KALKER ET AL.. PHN 17,025

Serial No.: 09/348,891 Group Art Unit: 2615

Filed: July 6, 1999 Examiner: T.Q. Tran

Title: DETECTION OF A WATERMARK IN A COMPRESSED VIDEO SIGNAL

Commissioner for Patents
Washington, D.C. 20231

Sir:

Enclosed is an amendment in the above-identified application.

[X] No additional fee is required.

[ ] The fee has been calculated as shown below.

CLAIMS AS AMENDED			
	Claims remaining after amendment / Highest number previously paid for	Number extra / Rate	Additional Fee
Total Claims	6 Minus 20 [1] =	X $18 =	$
Independent Claims	4 Minus 4 [2] =	X $84 =	$
Multiple Dependent Claims, if any. If not previously paid, $280.			$
Total Additional fee for this amendment =			$

[1] If less than 20, enter 20. [2] If less than 3, enter 3.

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Edward W. Goodman, Reg. 28,613
914-333-9611